

CHAPTER IV



RESULTS

4.1 Diffusion of KCl in Deionized Water

The results of the experiment on KCl diffusion in deionized water were presented in Table 4.1

Table 4.1 Experimental Results of KCl in Deionized Water at 27.8 °C

Run Number	Diffusivity (cm ² /sec)
1	1.98x10 ⁻⁵
2	2.26x10 ⁻⁵
3	2.29x10 ⁻⁵
average	2.18x10 ⁻⁵

4.2 Diffusion of Th(NO₃)₄ in 4N HNO₃

The results of the experiment on Th(NO₃)₄ diffusion in 4N HNO₃ at various temperatures were presented in Table 4.2, and were also presented graphically in Fig 4.1, and Fig 4.2 respectively.

Table 4.2 Diffusivity Values of $\text{Th}(\text{No}_3)_4$ in 4 N HNO_3 at Various Temperatures. ($\text{cm}^2/\text{sec.}$)

Temperature ($^{\circ}\text{C}$) Concentration (M)	10.5	20.0	22.0	28.5	30.5
0.05	1.67×10^{-5}	1.91×10^{-5}	1.94×10^{-5}	2.42×10^{-5}	2.99×10^{-5}
0.1	7.85×10^{-6}	1.88×10^{-5}	1.92×10^{-5}	2.44×10^{-5}	2.02×10^{-5}
0.4	4.86×10^{-6}	6.85×10^{-6}	6.81×10^{-6}	1.95×10^{-5}	2.91×10^{-5}
0.6	1.45×10^{-6}	4.86×10^{-6}	6.81×10^{-6}	9.85×10^{-6}	1.94×10^{-5}
0.8	3.50×10^{-7}	1.63×10^{-6}	2.19×10^{-6}	7.85×10^{-6}	8.85×10^{-6}

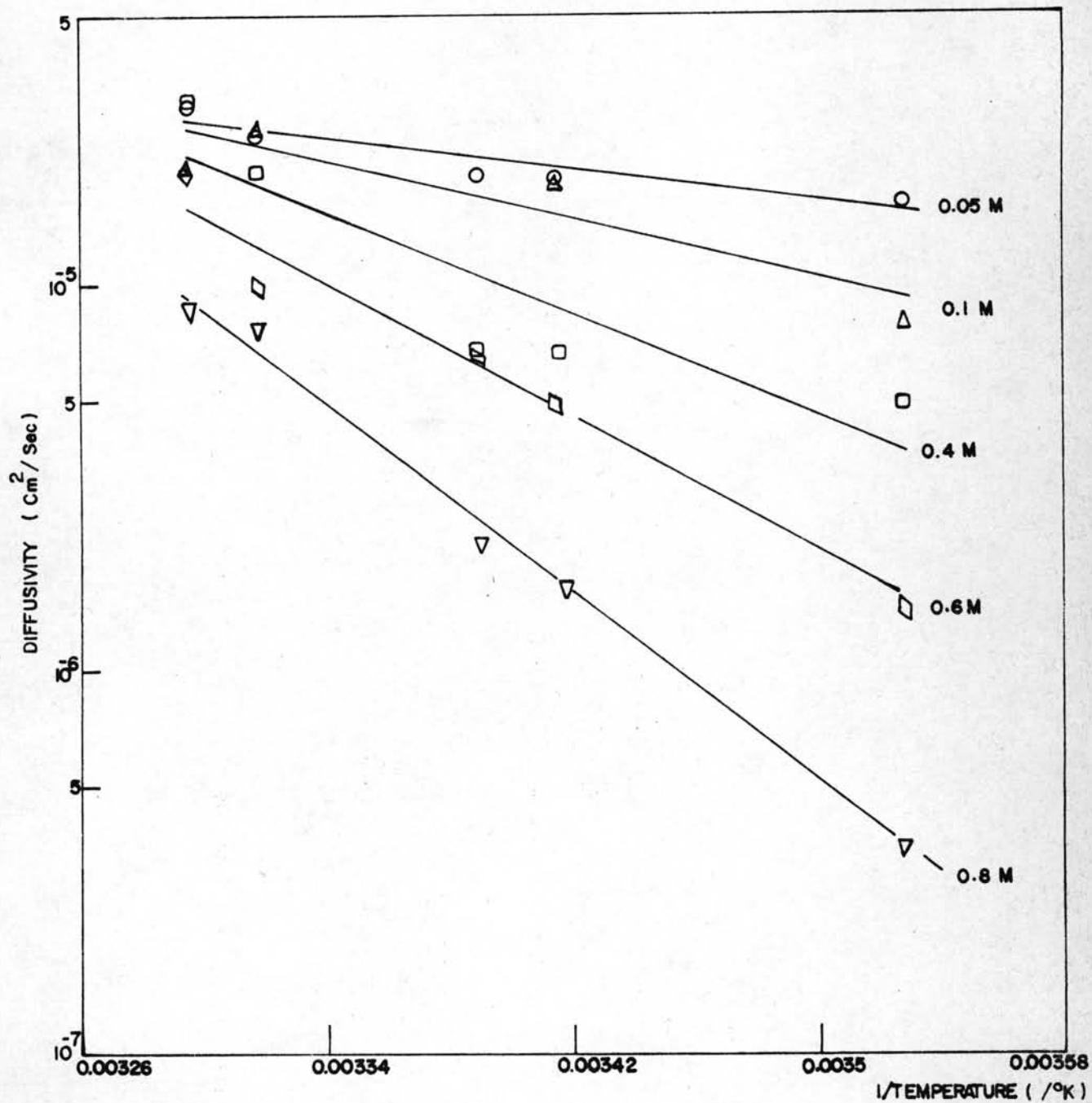


FIGURE 4.1 DIFFUSIVITY V.S TEMPERATURE

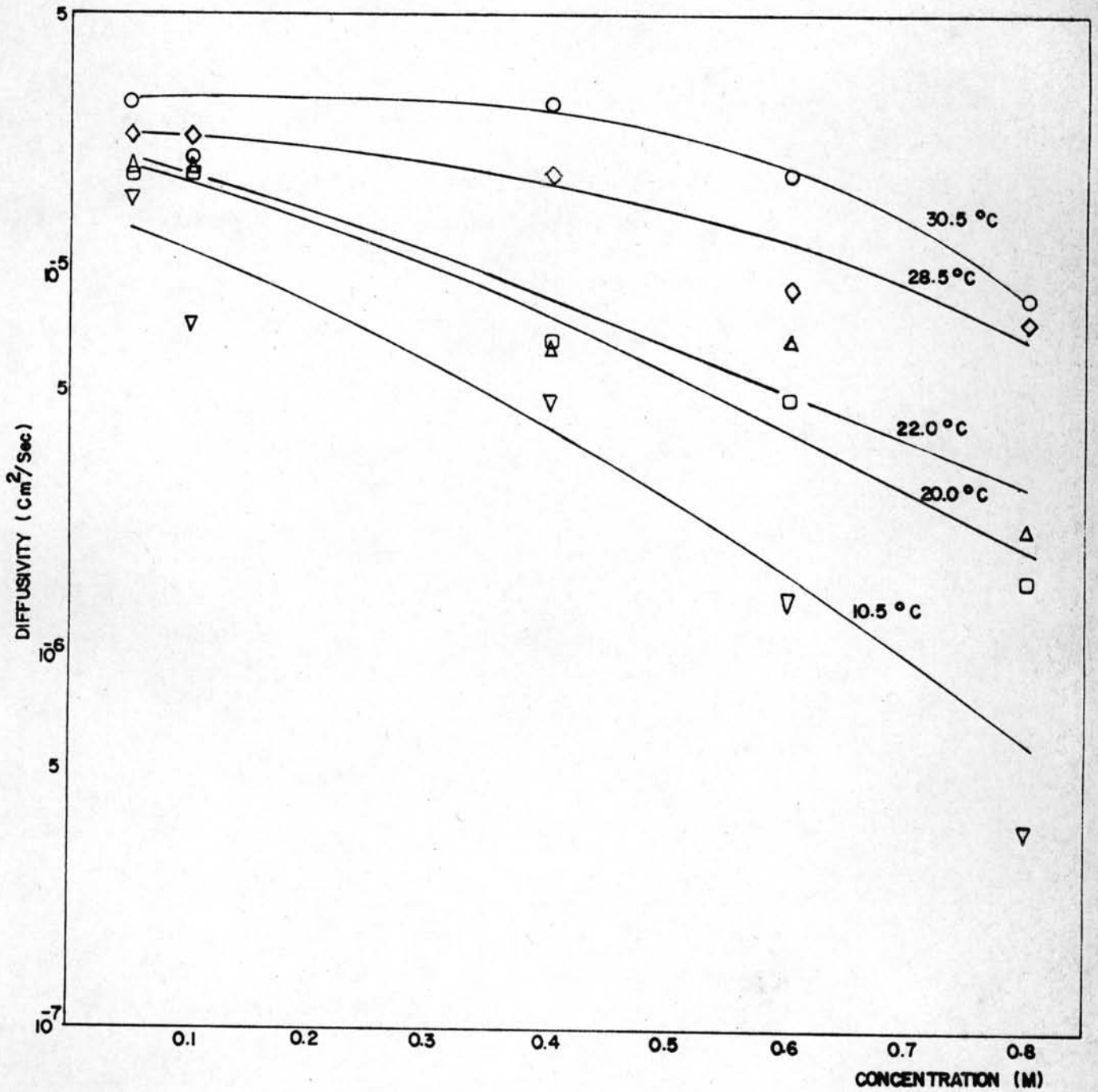


FIGURE 4.2 DIFFUSIVITY V.S CONCENTRATION

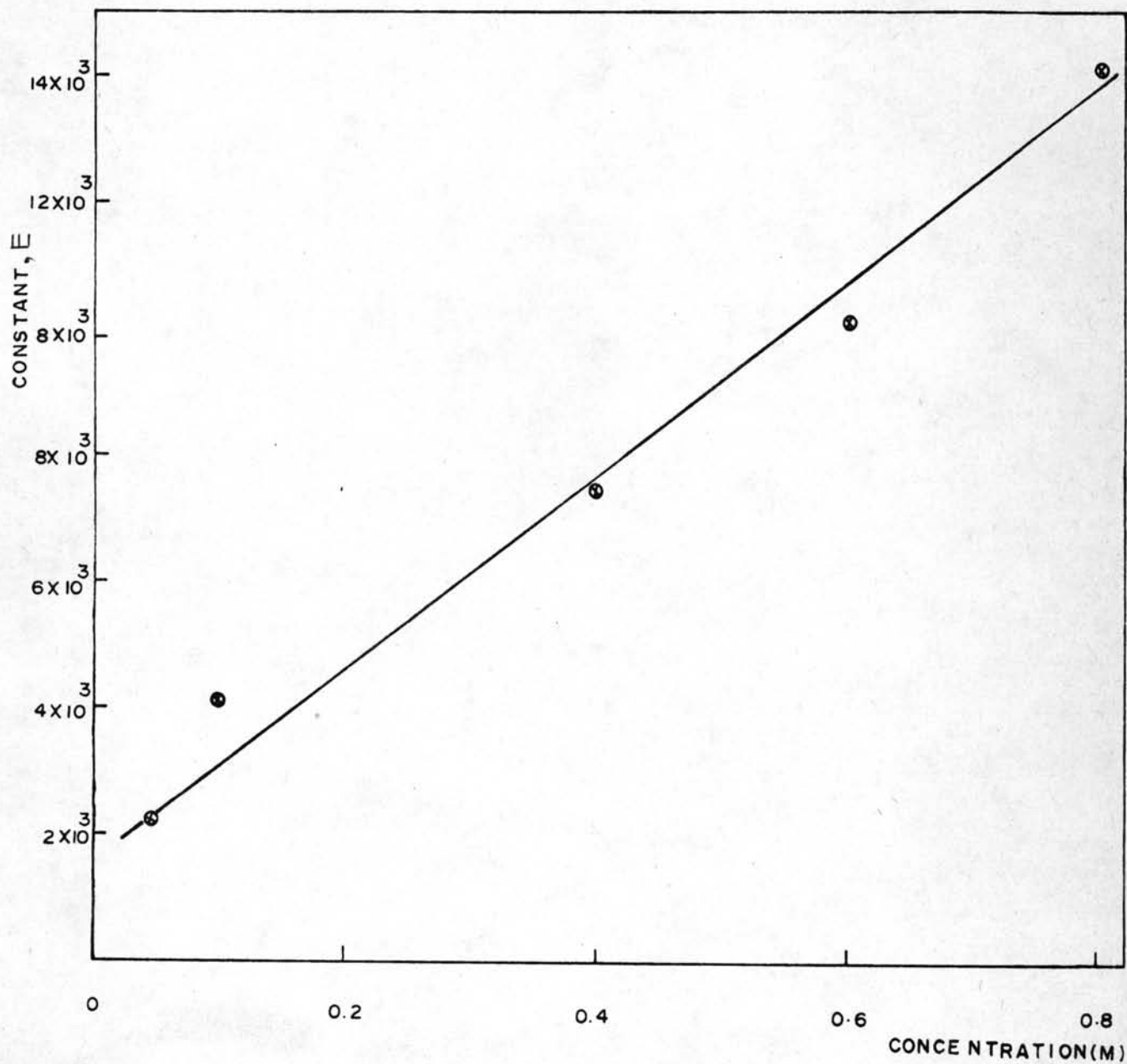


Figure 4.3 Constant, E vs. Concentration

4.3 Diffusion of $\text{Th}(\text{NO}_3)_4$ in 40 % Tributyl phosphate-Kerosene Solution

The results of the experiment on $\text{Th}(\text{NO}_3)_4$ diffusion in 40% tributyl phosphate-kerosene solution was presented in Table 4.3.

Table 4.3 Experimental Results of $\text{Th}(\text{NO}_3)_4$ in 40% Tributyl phosphate-Kerosene Solution at 30.5°C

$\text{Th}(\text{NO}_3)_4$ Concentration (M)	0.8
Diffusivity ($\text{cm}^2/\text{sec.}$)	6.85×10^{-6}